

Amendments to the Drawings

In accordance with 37 CFR § 1.121(d)(1), attached hereto is one annotated sheet depicting changes made to drawing Figure 1. The attached Figure 1 has been amended to add the "Prior Art" legend.

Also attached hereto is one replacement sheet of drawings, incorporating the changes made to Figure 1, which replaces the drawing figure originally submitted with the application.

Remarks

Reconsideration and allowance of this application, as amended, are respectfully requested.

The written description portion of the specification, the abstract of the disclosure, and drawing Figure 1 have been amended. Claims 1-9 have been canceled, and new claims 10-29 have been added. Claims 10, 21, and 24 are independent. Claims 10-29 are now pending in the application. The objections and rejections are respectfully submitted to be obviated in view of the amendments and remarks presented herein. No new matter has been introduced through the foregoing amendments.

The specification has been editorially amended for conformance with 37 CFR § 1.77(c), for consistency, and to correct any informalities. The abstract has been editorially amended for conformance with 37 CFR § 1.72(b). Claims 10-29 have been added to more particularly point out and distinctly claim the subject matter of Applicant's invention.

Figure 1 has been amended to add the "Prior Art" legend as required by the Office Action. Reconsideration and withdrawal of the objection to the drawings are respectfully requested.

Entry of each of the amendments is respectfully requested.

35 U.S.C. § 102(b) - Grosshauser

Claims 1, 2, 4, and 7-9 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,753,165 to Grosshauser.

Although the rejection is moot since these claims have been canceled, Applicant provides the following as to why the disclosure of Grosshauser does not anticipate Applicant's invention as now claimed.

Applicant's invention relates to an apparatus and method "for setting the density of ink dots on a print substrate" (specification page 1, original first paragraph). An object of Applicant's invention is to influence the ratio of pigments and solvent in the ink during the printing process, i.e., "to influence the ink density on the print substrate without refilling printing ink and/or solution into the ink tank" (specification page 2, original lines 16-17). This object is realized by effecting "evaporation of solution contained in the printing ink . . . leading to more color pigments being transferred on the print substrate during an ink application of equal volume" (specification page 5, original lines 19-21).

Applicant's independent claim 10 defines a rotary printing machine that includes, *inter alia*, "an ink reservoir containing ink having a mixture ratio of color pigments and a volatile solvent," and "a mechanism for effecting evaporation of

the solvent," with "the intensity of the ink applied to the print substrate being adjustable by effecting the solvent evaporation so as to adjust the ink mixture ratio." As one skilled in the art would recognize from Applicant's disclosure of an ink having a solvent that can be evaporated as described, the subject invention is directed to a machine for carrying out a rotogravure or a flexographic printing process.

Independent claim 21 defines a rotary printing machine that includes, *inter alia*, "an ink reservoir containing ink for rotogravure or flexographic printing, the ink having color pigments and a solvent in a first ink mixture," and "a mechanism for effecting evaporation of the solvent . . . so as to provide a second ink mixture having less solvent than the first ink mixture."

Grosshauser's "Short Inking Unit for an Offset Rotary Printing Machine" is structurally different from Applicant's claimed rotary printing machine. As is evident from the title, Grosshauser is directed to an offset printing machine. Grosshauser neither discloses nor suggests either rotogravure or flexographic printing machines.

To aid in pointing out the specific distinctions that render the claims patentable over Grosshauser, a brief explanation of the differences in the aforementioned printing processes is first provided below. Most important is the fact that the ink used in Grosshauser's offset machine has a different composition, a

different method of application, and a different drying mechanism than the "solvent ink" used in either rotogravure or flexographic machines. By the very nature of the rotogravure and flexographic processes, reliable ink transport is necessary. Therefore, it is necessary to use an ink that has a relatively low viscosity. To have a low viscosity, an ink for a rotogravure or flexographic process must contain a solvent.

In an offset process, an offset printing cylinder has on its outer surface one or more printing plates having hydrophilic areas and hydrophobic areas. The hydrophobic areas are the printing areas and the hydrophilic areas are the non-printing areas. In such an offset printing machine (see, e.g., Grosshauser's Figure 1) the printing cylinder 1 (often called the "plate cylinder") first passes a dampening system 2 that covers the printing plate with a dampening fluid such as water. This dampening fluid only adheres to the hydrophilic areas of the printing plate. The hydrophobic areas remain uncovered. After passing the dampening system, the printing plate passes the inking system. The ink used in an offset printing machine is based on oil or grease and is usually very pasty. Because of the oil or grease, the ink, once contacting the plate cylinder, does not mix with the water adhering to areas of the printing plate and instead adheres to the hydrophobic areas not covered with water. Later, the ink is transferred to the printing material. Therefore, the hydrophobic

areas are the printing areas. Thus, in an offset machine, the process relies on the different adhering properties of water on the different areas of the printing plate.

In contrast to this, the printing cylinders in a rotogravure printing press and a flexographic printing press have the same adhering properties, no matter whether printing areas or non-printing areas are concerned. In the flexographic printing process, the printing areas of the printing plate are raised in comparison with the non-printing areas. Since the printing parts have a height of about 60 to 100 microns relative to the non-printing parts, it is easy to apply the ink only to the printing parts. In the flexographic printing process, an anilox cylinder and a printing cylinder are employed. As indicated above, for reliable ink transport, it is necessary to use an ink that has a relatively low viscosity. This means that the flexographic ink must contain a solvent.

The rotogravure printing process is comparable to the flexographic printing process. The difference is that in the rotogravure process, the printing areas are lowered in comparison with the non-printing areas. The printing cylinder is covered with ink over its entire surface. However, a doctor blade is in engagement with the surface and removes the ink from the non-printing areas. Only the ink in the recesses remains on the printing cylinder and can be transferred to the printing material.

In the rotogravure printing process, an anilox cylinder is not even necessary, since the printing cylinder dips directly into the ink. As with the flexographic ink, for reliable ink transport, it is necessary to use a rotogravure ink that has a relatively low viscosity. This means that the rotogravure ink must contain a solvent.

The ink used in the rotogravure and flexographic printing processes can be regarded as a mixture of pigments and a solvent. The intensity of the color on the printing material is influenced by the quantity of solvent in the mixture (see Applicant's specification page 2, second paragraph). The more solvent that is in the mixture, the less is the intensity of the color, and vice versa. However, according to the prior art, the ratio of pigments and solvent in this mixture can only be influenced by adding solvent or by waiting until some of the solvent has evaporated.

In contrast to Applicant's claimed invention, Grosshauser discloses evaporating water from the cylinders of the inking systems. As described above, however, water is not a solvent for the ink in the offset printing process. Water does not mix with the ink used in offset printing. Therefore, in an offset machine, water must be kept away from the inking system because it disturbs the ink transport within the inking system. This is why Grosshauser discloses means for the evaporation of water.

More specifically, Grosshauser's disclosure is directed to an inking unit for an offset device, and has as an object "to provide a short inking unit for an offset rotary printing machine in which the viscosity of the ink is not reduced since little dampening fluid is able to get to the ink supply" (Grosshauser column 1, lines 20-23). Grosshauser teaches removing water because "[t]he net result is a marked reduction of dampening fluid being carried back into the ink supply source. This reduction in dampening fluid and ink intermixing reduces the formation of ink emulsions so that the viscosity of the ink is not reduced" (Grosshauser column 2, lines 42-46). Since offset printing ink contains no solvent (or only a minute amount of solvent), the ratio of pigments and solvent (if there is any) in the ink mixture cannot be influenced.

Grosshauser's device, therefore, does not meet, *inter alia*, Applicant's claim 10 requirements of "an ink reservoir containing ink having a mixture ratio of color pigments and a volatile solvent," and "a mechanism for effecting evaporation of the solvent," with "the intensity of the ink applied to the print substrate being adjustable by effecting the solvent evaporation so as to adjust the ink mixture ratio."

Similarly, Grosshauser's device does not meet, *inter alia*, Applicant's claim 21 requirements of "an ink reservoir containing ink for rotogravure or flexographic printing, the ink

having color pigments and a solvent in a first ink mixture," and "a mechanism for effecting evaporation of the solvent . . . so as to provide a second ink mixture having less solvent than the first ink mixture."

Since Grosshauser does not meet each limitation of the claimed invention, Grosshauser does not anticipate the invention defined by Applicant's independent claims 10 and 21 (and their respective dependent claims).

35 U.S.C. § 102(b) - Franklin

Claims 1 and 3 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,418,844 to Franklin et al. (hereinafter "Franklin").

For reasons analogous to those identified above with respect to the rejection over Grosshauser, the rejection under § 102(b) over Franklin is respectfully deemed to be moot. For at least the following reasons, the disclosure of Franklin does not anticipate Applicant's invention as now claimed.

Franklin is also directed to an inking unit for an offset printing machine. See, e.g., Franklin's introductory disclosure of "[a]n important problem in the development and the operation of printing machines for offset printing" (Franklin column 1, lines 14-57). See also Franklin's first sentence in the Summary of the Invention, i.e., that "[i]t is accordingly an object of the

invention, therefore, to provide an inking unit of the type noted in the introduction hereto" (column 1, lines 60-62).

Franklin's offset inking unit is structurally different from Applicant's claimed machine. Franklin's device, therefore, does not meet, *inter alia*, Applicant's claim 10 requirements of "an ink reservoir containing ink having a mixture ratio of color pigments and a volatile solvent," and "a mechanism for effecting evaporation of the solvent," with "the intensity of the ink applied to the print substrate being adjustable by effecting the solvent evaporation so as to adjust the ink mixture ratio."

Similarly, Franklin's device does not meet, *inter alia*, Applicant's claim 21 requirements of "an ink reservoir containing ink for rotogravure or flexographic printing, the ink having color pigments and a solvent in a first ink mixture," and "a mechanism for effecting evaporation of the solvent . . . so as to provide a second ink mixture having less solvent than the first ink mixture."

Since Franklin does not meet each limitation of the claimed invention, Franklin does not anticipate the invention defined by Applicant's independent claims 10 and 21 (and their respective dependent claims).

35 U.S.C. § 103(a)

Claims 5 and 6 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Grosshauser.

With regard to claim 5, the Office Action acknowledges that "Grosshauser does not teach a second ink reservoir, which is arranged in the transfer direction between the ink transfer roller and the mechanism for supporting evaporation of solutions on an ink transfer roller and through which additional ink can be applied to the ink transfer roller."

The Office Action concludes, however, that "[i]t would have been obvious . . . to modify Grosshauser to include a second ink reservoir, because one having ordinary skill in the art would recognize that this is merely duplication of parts, and would have the benefit of providing an additional ink reservoir for use in case the first ink reservoir were damaged, thereby reducing the downtime of the printing machine."

For at least the following reasons, the disclosure of Grosshauser would not have rendered obvious Applicant's invention as now claimed.

First, as indicated above in response to the § 102(b) rejection, Grosshauser fails to teach all of Applicant's claim limitations. Furthermore, Grosshauser fails to even suggest all of Applicant's claim limitations. The device defined by Applicant's presently pending claims would not have been obvious because the disclosure of Grosshauser cannot be modified to rectify its above-described deficiencies. Thus, all of Applicant's claim limitations are not taught or suggested by the disclosure of Grosshauser.

Second, there is no suggestion or motivation in Grosshauser that would have led one to modify the reference in a way that would produce the invention defined by any of Applicant's pending apparatus claims 10-23. As indicated above, Grosshauser's disclosure is directed to an inking unit for an offset device, and has as an object "to provide a short inking unit for an offset rotary printing machine in which the viscosity of the ink is not reduced since little dampening fluid is able to get to the ink supply." That is not Applicant's claimed invention.

In view of the different subject matter disclosed by Grosshauser, there is simply no incentive to modify Grosshauser's offset device so as to arrive at Applicant's claimed device. Thus, there is no suggestion or motivation in Grosshauser that would have led one to modify the reference in a way that would produce the invention defined by any of Applicant's apparatus claims 10-23.

New independent method claim 24 and its dependent claims 25-29 are also allowable. Claim 24 defines a method that includes the steps of "supplying ink for rotogravure or flexographic printing, from an ink reservoir, . . . the reservoir ink having a mixture ratio of color pigments and a solvent," and "effecting evaporation of the solvent from the ink on the ink transfer roller so as to adjust the ink mixture ratio, and thereby adjust the intensity of the ink applied to the print substrate." Neither

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Grosshauser nor Franklin either discloses or suggests Applicant's claimed method.

In view of the foregoing, this application is now in condition for allowance. If the examiner believes that an interview might expedite prosecution, the examiner is invited to contact the undersigned.

Respectfully submitted,

JACOBSON HOLMAN PLLC

By:

Harvey B. Jacobson, Jr. Reg. No. 34,378
for Harvey B. Jacobson, Jr.
Reg. No. 20,851

400 Seventh Street, N. W.
Washington, D.C. 20004
Telephone: (202) 638-6666
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Annotated Sheet

Fig. 1
PRIOR ART

